

PERFORMANCE ASSESSMENT OF URBAN DRAINAGE SYSTEMS

ABSTRACT

Performance assessment of urban drainage infrastructures is an increasingly important field of knowledge. Performance has traditionally been expressed in a variety of ways relating mostly to local design practice, without a consensus on how it should be measured or compared.

This thesis proposes a methodology for a standardised, systematic, objective and flexible technical performance assessment of urban drainage systems, based on the decisional concept of utility functions. It was designed as a technical analysis tool with the purpose of shifting the focus of technical management of urban drainage systems to a performance-oriented view.

Twenty-six technical performance indicators have been defined covering the hydraulic and environmental domains. For each one, performance and generalising functions have been developed in order to produce performance graphs or tables. These are easy to interpret and compare, and condense a large quantity of information provided by modelling or monitoring, translating it into overall system performance for different scenarios.

The methodology was tested and validated for a representative set of case studies and can be considered as a post-processor to sewer system modelling and monitoring, showing significant potential in their performance assessment, and providing a decision support basis for sewer system design, diagnosis, operation and rehabilitation.

Keywords: urban drainage systems, performance assessment, performance indicators, technical management, decision support, rehabilitation.